

Claims

1 An alarm for detecting radiation and/or pollutants such as smoke, carbon monoxide or the like having:

5

a housing means (500);

an alarm circuit (400) including detection means (DET1) for detecting said radiation and/or pollutants;

10

first electrical connection means (PL1, PL2) connectable to an external power-supply for supplying power to said alarm circuit;

15

and control means (300) responsive to receipt of a preselected number of pulses over a preselected time period to apply a preset control signal to said alarm circuit (400);

wherein said alarm circuit (400) is responsive to said preset control signal to reset or test said alarm in dependence on said preset control signal.

20

2 An alarm as claimed in claim 1 wherein:

said control means (300) is responsive to the energising and de-energising of the external power supply said preselected number of times over said preselected time period to apply said preset control signal to said alarm circuit.

3 An alarm as claimed in claim 1 or 2 wherein:

said alarm has first switch means (SW2) actuatable by a user to generate a respective pulse for each actuation thereby to apply a user selected number of pulses to said control means (300);

and said control means is responsive to receipt of said preselected number of said pulses over said preselected time period to apply a preset control signal to said alarm circuit (400).

5 4 An alarm as claimed in claim 3 wherein said first switch means (SW2) is mounted on said alarm housing.

5 An alarm as claimed in claim 3 wherein said first switch means (SW2) is mounted remote from said alarm housing.

10

6 An alarm as claimed in claim 4 or 5 wherein said first switch means (SW2) is adapted for connection to a switch live side of a switch for a lighting circuit.

7 An alarm as claimed in any of claims 1 to 6 wherein:

15

said alarm has second electrical connection means (SL) for connection to a switch live side of a switch for a lighting circuit;

20 and wherein said second electrical connection means is operable to receive pulses caused by user actuation of said switch between its on and off states and apply said pulses to said control means (300) thereby to cause a preset control signal to be applied to said alarm circuit (400) in response to generation of said preselected number of pulses over said preselected time period.

25 8 An alarm as claimed in any of claims 1 to 7 further comprising switch means (RL1) for an external light source (LB) and actuatable in response to generation of a preselected control signal to energise said light source.

30 9 An alarm as claimed in any of claims 1 to 7 further comprising a relay (RL1) and a light source (LB) wherein said relay is actuatable in response to generation of a preselected control signal to energise said light source.

10 An alarm as claimed in any of the preceding claims wherein when said preselected number of pulses over said preselected time period is one, said control means (300) is operable to apply a preset control signal to said alarm circuit (400) thereby to reset said alarm.

5

11 An alarm as claimed in any of claims 1 to 9 wherein when said preselected number of pulses over said preselected time period is one, said control means (300) is operable to apply a preset control signal to said alarm circuit (400) thereby to test said alarm.

10

12 An alarm as claimed in any of claims 1 to 10 wherein when said preselected number of pulses over said preselected time period is two, said control means (300) is operable to apply a preset control signal to said alarm circuit (400) thereby to test said alarm.

15

13 An alarm as claimed in claim 11 wherein when said preselected number of pulses over said preselected time period is two, said control means (300) is operable to apply a preset control signal to said alarm circuit (400) thereby to reset said alarm.

20

14 An alarm circuit as claimed in any of the preceding claims wherein said alarm circuit (400) comprises means (TR1) for reducing the sensitivity of said detection means (DET1).

25

15 An alarm as claimed in claim 14 wherein said means (TR1) for reducing the sensitivity of said detection means (DET1) is operable in response to generation of a reset control signal by said control means (300) to reduce the sensitivity of said detection means (DET1) for a preselected time period thereby to reset said alarm.

30

16 An alarm circuit as claimed in any of the preceding claims wherein said alarm circuit (400) comprises means (TR2) for increasing the sensitivity of said

detection means (DET1).

17 An alarm as claimed in claim 15 wherein said means (TR2) for increasing the sensitivity of said detection means (DET1) is operable in response to 5 generation of a test control signal by said control means (300) to increase the sensitivity of said detection means (DET1) for a preselected time period thereby to test said alarm.

18 An alarm as claimed in any of the preceding claims further comprising:

10 a battery (B1) for supplying power to said alarm.

19 An alarm as claimed in claim 18 further comprising:

15 a charging circuit (100) including said first electrical connection means (PL1, PL2) for supplying power to a power rail (111, 210) for said alarm and for charging said battery.

20 An alarm as claimed in claim 18 or 19 further comprising an isolating 20 means (200) for selectively electrically disconnecting said battery from said alarm thereby to minimise leakage from said battery when said alarm is inactive.

21 An alarm as claimed in claim 19 wherein:

25 said isolating means (200) comprises a second switch means (TR3) in said power rail (111, 210) switchable between a first, conducting state connecting said battery (B1) to said alarm and a second, non-conduction state disconnecting said battery from said alarm.

30 22 An alarm as claimed in claim 21 wherein said charging circuit (100) comprises a third switch means (TR5) switchable between a first, conducting state and a second, non-conducting state in dependence on the voltage on said

power rail (111);

and wherein:

5 when said third switch means (TR5) is in said first, conducting state said third switch means (TR5) is operable to retain said isolating second switch means (TR3) in its conducting state;

and when said third switch means (TR5) is in said second, non-conducting state

10 the state of said third switch means (TR5) is dependent on the voltage on said power rail (111) such that said second switch means (TR3) is non-conducting in response to said voltage on said power rail being below a preselected value indicating a low battery charge, thereby to disarm said alarm during charging of said battery (B1).

15

23 An alarm as claimed in claim 22 further comprising a disconnect means (550) actuatable to switch said switch means (TR3) into its non-conducting state thereby disabling said switch means and preventing actuation of said alarm.

20 24 An alarm as claimed in claim 23 wherein said disconnect means (550) comprises button means (562) movable between a first, OFF position wherein said switch means (TR3) is rendered non-conducting and a second, ON position wherein said switch means (TR3) is enabled.

25 25 An alarm as claimed in claim 23 or 24 wherein:

said switch means (TR3) is a multi electrode semiconductor device having a control electrode for controlling conduction between further electrodes thereof;

30 and said button means (562) is movable into its first, OFF position to vary the potential on said control gate means thereby to render said switch means (TR3) non-conducting.

26 An alarm as claimed in claim 24 or 25 wherein:

said housing comprises:

5

a first backing plate (502) for mounting on a surface;

a second backing plate (506) detachably mountable on said first backing plate;

10 and a cover means (514) for covering said backing plates;

and wherein the arrangement of said disconnect means is such that engagement of said second backing plate (506) on said first backing plate (502) moves said disconnect means into its second, ON position thereby to enable said switch means (TR3) and disengagement of said second backing plate (506) from said first backing plate (502) moves said disconnect means into its first, OFF position thereby to disable said switch means (TR3).

27 An alarm as claimed in any of claims 20 to 26 further comprising indicator means (LED1) operable in response to power on said voltage rail (210) downstream of said isolating means to indicate that said alarm is enabled.

28 An alarm for detecting radiation and/or pollutants such as smoke, carbon monoxide or the like having:

25

a housing means (500);

an alarm circuit (400) including detection means (DET1) for detecting said radiation and/or pollutants;

30

first electrical connection means (PL1, PL2) connectable to an external power supply for supplying power to said alarm circuit;

and switch means (RL1) for a light source (LB), said switch means being actuatable in response to triggering of said alarm to energise said light source.

5 29 An alarm as claimed in claim 28 wherein said switch means comprises a relay (RL1) and said light source (LB) is external to said alarm.

30 An alarm as claimed in claim 28 wherein said light source is mounted in said alarm.

10

31 An alarm for detecting radiation and/or pollutants such as smoke, carbon monoxide or the like having:

a housing means (500);

15

an alarm circuit (400) including detection means (DET1) for detecting said radiation and/or pollutants;

a battery (B1) for supplying power to said;

20

and an isolating means (200) for selectively electrically disconnecting said battery from said alarm thereby to minimise leakage from said battery when said alarm is inactive.

25 32 An alarm as claimed in claim 31 further comprising:

first electrical connection means (PL1, PL2) connectable to an external power supply for supplying power to said alarm circuit;

30 and a charging circuit (100) including said first electrical connection means (PL1, PL2) for supplying power to a power rail (111, 210) for said alarm and for charging said battery.

33 An alarm as claimed in claim 31 or 32 wherein:

said isolating means (200) comprises a second switch means (TR3) in said power rail (111, 210) switchable between a first, conducting state connecting said battery (B1) to said alarm and a second, non-conduction state disconnecting said battery from said alarm.

34 An alarm as claimed in claim 32 wherein said charging circuit (100) comprises a third switch means (TR5) switchable between a first, conducting state and a second, non-conducting state in dependence on the voltage on said power rail (111);

and wherein:

15 when said third switch means (TR5) is in said first, conducting state said third switch means (TR5) is operable to retain said isolating second switch means (TR3) in its conducting state;

and when said third switch means (TR5) is in said second, non-conducting state
20 the state of said third switch means (TR5) is dependent on the voltage on said power rail (111) such that said second switch means (TR3) is non-conducting in response to said voltage on said power rail being below a preselected value indicating a low battery charge, thereby to disarm said alarm during charging of said battery (B1).

25 35 An alarm as claimed in claim 33 further comprising a disconnect means (550) actuatable to switch said switch means (TR3) into its non-conducting state thereby disabling said switch means and preventing actuation of said alarm.

30 36 An alarm as claimed in claim 35 wherein said disconnect means (550) comprises button means (562) movable between a first, OFF position wherein said switch means (TR3) is rendered non-conducting and a second, ON position

wherein said switch means (TR3) is enabled.

37 An alarm as claimed in claim 35 or 36 wherein:

5 said switch means (TR3) is a multi electrode semiconductor device having a control electrode for controlling conduction between further electrodes thereof;

10 and said button means (562) is movable into its first, OFF position to vary the potential on said control gate means thereby to render said switch means (TR3) non-conducting.

38 An alarm as claimed in claim 36 or 37 wherein:

said housing comprises:

15 a first backing plate (502) for mounting on a surface;

a second backing plate (506) detachably mountable on said first backing plate;

20 and a cover means (514) for covering said backing plates;

25 and wherein the arrangement of said disconnect means is such that engagement of said second backing plate (506) on said first backing plate (502) moves said disconnect means into its second, ON position thereby to enable said switch means (TR3) and disengagement of said second backing plate (506) from said first backing plate (502) moves said disconnect means into its first, OFF position thereby to disable said switch means (TR3).

39 An alarm as claimed in any of claims 32 to 38 further comprising indicator means (LED1) operable in response to power on said voltage rail (210) downstream of said isolating means to indicate that said alarm is enabled.